



Louisiana Department of Environmental Quality Source Water Assessment Program

Potential Susceptibility Assessment of a Ground Water Source of Public Drinking Water

I. Basis for Assessment

The following sections contain information necessary to understand how and why this assessment was conducted. **It is important to review this information to understand what the ranking of this source means.** A map showing the delineated source water protection area and the inventory of significant potential sources of contamination identified within that area are attached. If you have any questions regarding this assessment, please contact LDEQ, Environmental Evaluation Division at 225-765-0578.

A. Background

Under the Safe Drinking Water Act Amendments of 1996, all states are required by the U.S. Environmental Protection Agency (EPA) to assess every source of public drinking water for its relative susceptibility to contaminants regulated by the Act. This assessment is based on a land use inventory of the delineated protection area and sensitivity factors associated with the well and aquifer characteristics as ground water sources are being considered first. An assessment of surface water sources of drinking water will follow in the near future.

B. Level of Accuracy and Purpose of the Assessment

Since there are over 1900 public water supply systems in Louisiana, there is limited time and resources to accomplish these assessments. All assessments must be completed by May 6, 2003. An in-depth, site-specific investigation of each significant potential source of contamination was not possible. **Therefore, this assessment should be used as a planning tool, taken into account with local knowledge and concerns, to develop and implement appropriate protection measures for this source. The results should not be used as an absolute measure of risk and they should not be used to undermine public confidence in their water system.**

II. Methodology

A. Identification of Significant Potential Sources of Contamination

A significant potential source of contamination (SPSOC) is defined as any facility or activity that stores, uses, or produces, as a product or by-product, the contaminants regulated under the Safe Drinking Water Act and has a sufficient likelihood of releasing such contaminants at levels that could pose a concern relative to drinking water sources. The SPSOC locations were obtained by field surveys and from available databases. The list of significant potential sources and their rankings used to develop the assessment is shown below.

SIGNIFICANT POTENTIAL SOURCES OF CONTAMINATION AFFECTING GROUNDWATER

Higher Risk

Abandoned Water Well
Above Ground Storage Tank
Agriculture Chemical-
Formulation/Distribution
(pesticide/insecticide)
Animal Feed Lots/Dairies (including
impoundments)
Battery Recyclers
Body Shop/Paint Shop
Cercla Site (including impoundments)
Chemical Plant (including
impoundments)
Class V Injection Wells
- Motor Vehicle Waste Disposal Wells

- Industrial Waste Disposal Wells
- Large Capacity Cesspools
Dry Cleaner/Laundromat
Inactive/Abandoned Site (including
impoundments)
Major Industrial Site Plume
Military Facility (including impoundments)
Petroleum (includes bulk plants)
Septic System
Truck Terminal
Underground Storage Tank
Wood Preserving Plant (including
impoundments)

Medium Risk

Airport
Auto/Boat/Tractor/Small Engine Shop
Class I Injection Well (Industrial &
Hazardous)
Class II Injection Well (Oil & Gas)
Class III Injection Well (Mining Salt or
Sulphur)
Furniture Stripping
Inactive Water Well
Oil/Gas Well & Associated Drilling
Activities (including
impoundments)

Oil/Gas Tank Battery
Oxidation Pond
Promiscuous Dump
Railroad Yard - Switching
Railroad Yard- Loading and Offloading
Railroad Yard- Maintenance
Sand/Gravel Pit
Sanitary Landfill (active or inactive)
Sewer Treatment Plant (including
impoundments)

Lower Risk

Asphalt Plant
Car Wash
Cemetery
Funeral Home
Golf Course
Hospital
Irrigation Well
Lumber Mill
Metal Plating/Metal Working
Nuclear Plant
Paper Mill
Pipeline Compressor Stations
Plant Nursery

Port Facilities
Power Plant
Printing Shops
Salvage Yard
Sewer Lift Station

**Line Potential Sources of Contamination
Railroads, Pipelines and Sewer Lines, Roads, and
Hazardous Waste Transportation Routes are Line
Potential Sources of Contamination subject to
spills and leaks. They will be rated based on a
pertinent number per square mile in the
delineated area as will septic systems.**

B. Potential for Contamination by Significant Potential Sources of Contamination Identified on the Map

Potential contamination sources are facilities that use, produce, or store contaminants of concern (those regulated under the Safe Drinking Water Act) which, if improperly managed, could find their way into a source of public drinking water. **It is important to understand that a release may never occur from a SPSOC provided they are using best management practices. Many SPSOCs are regulated at the federal level, state level, or both to reduce the risk of a release. Facility-specific management practices are not taken into account in estimating risks.** There are a number of methods that water systems can use to work cooperatively with owners of SPSOCs. These often involve educational visits and inspections of stored materials. Many owners of such facilities may not even be aware that they are located near a public water supply well. It is also important to note the contaminants of concern listed for each SPSOC are not intended to be comprehensive, but rather those most commonly associated with the SPSOC. In addition, any specific SPSOC may actually have none, some, or more types of contaminants associated with it than what is listed.

C. Ranking of Significant Potential Sources of Contamination

Significant potential sources of contamination were ranked as high, medium, or low risk according to the following considerations: 1) Sources of ground water contamination in the past, 2) Sources of ground water contamination in the past which have caused contamination of public water supply wells, 3) Review of ranking schemes in the literature from other states and the U.S. EPA, and 4) Experience of LDEQ staff. An important consideration is the proximity of significant potential sources to the well. Potential contamination sources located in closest proximity to the wells will pose the greatest threat. The greater the distance the less chance of contamination, because dilution, sorption, and degradation increase with distance. Most public water supply contamination incidents in the State of Louisiana have resulted from either leaking underground storage tanks or surface spills of gasoline in the vicinity of the wells. These plumes usually do not move beyond 1000 feet as natural bacteria in the soil usually break down the gasoline through natural degradation processes. The further away a significant potential source of contamination is located from the well the lower the risk to the well, even if the SPSOC is considered to be a high-risk activity or facility.

D. Determination of Water Well Sensitivity

The overall sensitivity ranking for water wells was derived considering the following factors:

1. Depth of well - the shallower the well, the higher the sensitivity. Deeper wells are afforded natural protection due to the presence of clay or “confining” layers present in the subsurface. These layers substantially restrict or impede the flow of water (and possible contaminants) from the surface and shallow subsurface to deeper aquifers tapped by deep wells. Historically, contamination of public water supply wells in Louisiana has occurred in wells screened at relatively shallow depths, or less than 350 feet below land surface.
2. Age of the well - the older the well, the more sensitive. As wells age, the grouting and casing can deteriorate. If a well was drilled prior to the most recent construction standards of November 1985, it is also considered more sensitive. Deteriorated or improperly constructed

wells can provide conduits for contaminants to enter the aquifer from the surface or shallow subsurface.

3. Aquifer - the higher the average ground water flow velocity, the higher the sensitivity. The faster the ground water flows, the faster it will carry contaminants to the well. This was based on the average ground water velocity of the aquifer in which the well is completed. The range of average ground water velocities is 33 feet per year to 1162 feet per year.
4. Soil Recharge Potential - the sandier the soils the higher the sensitivity. Sandy soils allow more water to infiltrate from the surface to the subsurface than do silt or clay soils. This was based on the State of Louisiana Aquifer Recharge Potential Map developed for LDEQ by the Louisiana Geological Survey in 1989.

III. Prioritization for Protection Activities

This susceptibility assessment should be used as a basis for determining appropriate new protection measures or reevaluating current protection efforts. No matter what the susceptibility ranking a source receives, protection is always important. Whether the source is currently located in a “pristine” area or an area with numerous industrial landuses that require education and surveillance, the way to ensure good water quality in the future is to act now to protect valuable water supply resources.

An effective source water protection program is tailored to the particular local source water protection area. Local water supplies or communities may take steps to address SPSOCs of particular concern by contacting the appropriate state regulatory agency shown on the List of Regulatory Contacts. A comparative potential susceptibility analysis will be conducted upon completion of **all** assessments to determine a relative risk ranking among all public water supply systems. The results of this analysis will be used with regard to protection activities. The comparison is based on the well sensitivity analysis and a vulnerability analysis based on the types and numbers of SPSOCs and their distance from the well. Also being considered is the density per square mile of roads, railroads, pipelines, and oil/gas wells as well as the number of septic tanks within the delineated area. The comparative potential susceptibility analysis matrix and ranking will be made available upon request and will be posted on the LDEQ web site.

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POTENTIAL CONTAMINATION SOURCE REGULATORY CONTACTS

<u>Source</u>	<u>Contact</u>
Active And Inactive Hazardous Waste Sites-Operating Facility	Department of Environmental Quality Remediation Services Division Post Office Box 82178 Baton Rouge, LA 70884-2178 (225) 765-0355 Environmental Manager
Waste Impoundments of Oil & Gas Industry	Department of Natural Resources Oilfield Waste & Underground Injection Wells & Mining Division Post Office Box 94275 Baton Rouge, LA 70804-9275 (225) 342-5570 Division Manager
Pipelines for Natural Gas, Crude Oil, & other Fluids	Department of Natural Resources Pipelines Division Post Office Box 94275 Baton Rouge, LA 70804-9275 (225) 342-5505 Chief of Pipeline Safety or call collect the company listed on pipeline marker
Inactive & Abandoned Sites	Department of Environmental Quality Remediation Services Division Post Office Box 82178 Baton Rouge, LA 70884-2178 (225) 765-0355 Environmental Manager
Underground Storage Tanks	Department of Environmental Quality Remediation Services Division Post Office Box 82178 Baton Rouge, LA 70884-2178 (225) 765-0355 Environmental Manager
Underground Injection	Department of Natural Resources Oilfield Waste and Underground Injection Wells & Mining Division Post Office Box 94275 Baton Rouge, LA 70804-9275 (225) 342-5515 Director of Injection and Mining

Abandoned Wells other than Water Wells	<p>Department of Natural Resources Post Office Box 94275 Baton Rouge, LA 70804-9275 (225) 342-5540 Manager of Oilfield Site Restoration</p>
Abandoned Water Wells	<p>Department of Transportation and Development Water Resources Section Post Office Box 94245 Baton Rouge, LA 70804-9245 (225) 379-1434 Chief of Water Resources</p>
Agriculture	<p>Department of Agriculture and Forestry Post Office Box 3596 Baton Rouge, LA 70821-3596 (225) 925-3768 Director of the Pesticides and Environmental Programs</p>
Drinking Water	<p>Department of Health and Hospitals Chief Engineer 6867 Bluebonnet Blvd. Baton Rouge, LA 70810 (225) 765-5038 Chief Engineer</p>
Solid Waste	<p>Department of Environmental Quality Remediation Services Division Post Office Box 82178 Baton Rouge, LA 70884-2178 (225) 765-0355 Environmental Manager</p>

Surface Discharge

Department of Environmental Quality
Office of Environmental Compliance
Surveillance Division
Post Office Box 82215
(225) 765-2953
Baton Rouge, La 70884-2215
Administrator

Citizen 24-hour Hotline
(Complaints) (Spills)

Department of Environmental Quality
(225) 342-1234

Customer Information Number

(888) 763-5424

Source Water Assessment

Department of Environmental Quality
Environmental Evaluation Division
Post Office Box 82178
Baton Rouge, LA 70884-2178
(225) 765-0578
Environmental Supervisor

EPA'S SOLE SOURCE AQUIFER PROTECTION PROGRAM: A SUPPLEMENT TO SOURCE WATER PROTECTION PROGRAMS IN LOUISIANA

Sole Source Aquifers in Louisiana

More than 17,000 square miles of Louisiana falls within areas designated by the U.S. Environmental Protection Agency as "Sole Source Aquifers" (SSAs). Under Section 1424(e) of the Safe Drinking Water Act these lands, covering most of the southern half of the State, receive an increased level of protection for ground water which serves as a drinking water source. If you are located in a designated SSA area you may want to take a more active role in the SSA program as one component of a local source water protection program. If you are outside of this area you might consider the advantages of submitting a petition to EPA for a SSA designation.

What is a Sole Source Aquifer?

The Sole Source Aquifer Program originated with the Safe Drinking Water Act in 1974. Under the program, EPA may designate an aquifer as the "sole or principal source" of drinking water for an area if it supplies more than 50% of the drinking water for that area and there are no other reasonably available alternative sources if the aquifer becomes contaminated. Designation of an aquifer typically begins with a petition to EPA by a local group which is interested in protecting the water quality in the aquifer. Currently, there are 70 designated SSAs in the United States. The Chicot SSA and the Southern Hills SSA together cover 25 parishes in Southern Louisiana and form one of the largest designated areas in the country.

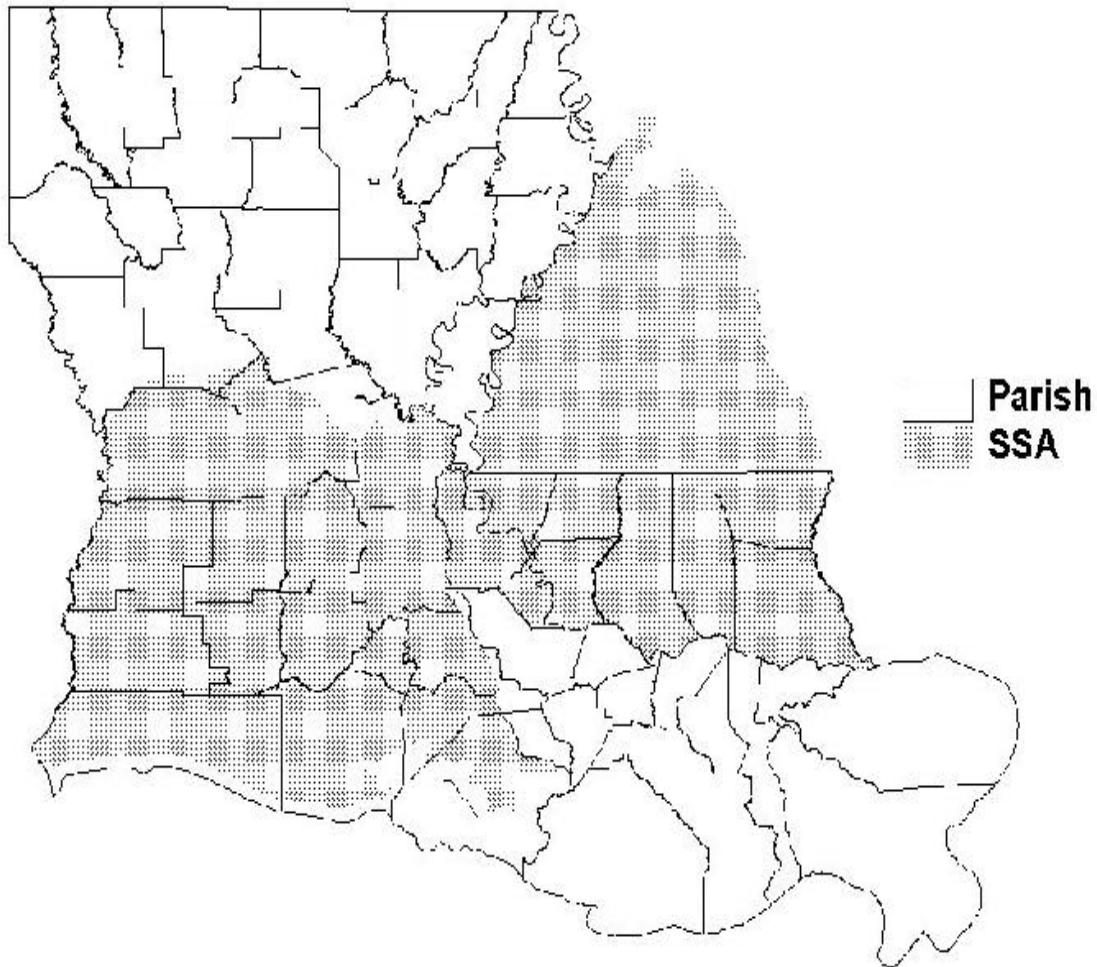
How can the Sole Source Aquifer Protection Program Assist in Implementing Local Source Water Protection Programs?

Designation as an SSA protects an area's ground water resource through EPA review of projects which are proposed for federal financial assistance (such as loans, grants, loan guarantees, etc) in the designated area. Where EPA finds that a project may pose a threat to water quality in the aquifer the agency may require modifications to the project or may block federal financial assistance if the project is not modified in an acceptable fashion. The EPA has developed agreements with other Federal agencies to identify the types of projects which will be referred to EPA for review. A number of projects, including those with financial assistance from the Federal Highway Administration, Department of Housing and Urban Development, and U.S. Department of Agriculture have been modified as a result of review under the SSA program.

Even though many projects with federal financial assistance in SSA areas are referred to EPA through interagency agreements, there may be other eligible projects which are not covered by such agreements or which are not reviewed by EPA for a variety of reasons. Some of these projects may have potential for contamination of the aquifer. *In designated SSA areas local organizations can augment their source water protection program and assist in implementation of the SSA program by contacting EPA when they identify projects proposed for Federal financial assistance which might have a potential for contamination of the aquifer.*

An added benefit of designation is that it can increase community awareness on the use, value, and vulnerability of the local aquifer which helps build support for developing and implementing

Sole Source Aquifers in Louisiana



various ground water protection efforts. As such, the SSA program can provide a valuable supplement to the Source Water Protection program.

Visit the EPA Region 6 Internet site for the Sole Source Aquifer program at <http://www.epa.gov/earth1r6/6wq/swp/ssa> for:

- Detailed maps of SSAs in Louisiana and other Region 6 States
- Information on the effects of SSA designation
- Facts on the SSA program in Region 6 and the process of designating an aquifer

Visit the EPA Headquarters Internet site for the Sole Source Aquifer program at <http://www.epa.gov/OGWDW/ssanp.html> for:

- Information on the program nationally
- Maps of designated areas

Source Water Assessment Results

Water System Name:

PWS ID Number:

Date of Assessment:

A. Sensitivity Analysis – based on the depth and age of the well, the average ground water velocity in the aquifer, and the soil recharge potential.

Well	Survey Radius	Ranking	Comments

Source of Well Data: Primary source is the Louisiana Department of Transportation and Development, Office of Water Resources with supplementary data provided by the Louisiana Department of Health and Hospitals and water system personnel.

B. Vulnerability Analysis – based on the types and numbers of significant potential sources of contamination (SPSOC) and their distances from the well

Well	# High Risk SPSOC w/in 1000'	# Medium Risk SPSOC w/in 1000'	# Low Risk SPSOC w/in 1000'	# High Risk SPSOC >1000'	# Medium Risk SPSOC >1000'	# Low Risk SPSOC >1000'

SIGNIFICANT NON-POINT POTENTIAL SOURCES OF CONTAMINATION

Line Feature Densities Per Square Mile within the Delineated Area*

Well	Roads mi/mi ²	Railroads mi/mi ²	**Pipelines mi/mi ²

* Source of data: U.S. Census Tiger Files

Contaminants of Concern

Roads : Surface Runoff, Miscellaneous Chemicals (Spills), Herbicides

Railroads : Herbicides, Phenols, Miscellaneous Chemicals (Spills)

Pipelines: Oil, Miscellaneous Chemicals

****Pipelines:** Accurate pipeline data is to be furnished by the US Dept. of Transportation at a later date and forwarded to the water system.

Density of Septic Systems within a 2-year Time of Travel of the Well*

Well	2-Year Time of Travel Survey Radius (feet)	Number of Septic Tanks w/in 2-yr Time of Travel

* Number of Septic Tanks determined by physical count.

2-year time of travel calculated using average ground water velocity for the aquifer in which the well is completed. Research data indicate pathogens may remain viable for up to 2 years in the subsurface and are a primary constituent of septic system effluent. A 2 -year time of travel survey radius of 1000 feet is used as a default for unknown aquifers.

Contaminants of Concern for Septic Systems : Pathogens, Nitrates, Metals, Solvents, Detergents, Oils & Grease.

Density of Oil and Gas Wells per Square Mile within the Delineated Area*

Well	Number of Oil & Gas Wells per mi²

* Source of Data: Louisiana Dept. of Natural Resources SONRIS database.

A parish-wide map showing the locations of all oil and gas wells in the parish will be provided with the final susceptibility analysis, after all ground water systems have been assessed.

Contaminants of Concern for Oil & Gas Wells: hydrocarbons, sulfides, chlorides